observations of the zodiacal light made by him whilst at Ura-tyube.

DANIEL'S COMET.—The spectrum of Daniel's comet (1907*d*) was photographed, with an objective-prism camera, at the Nice Observatory on several nights during July and August by MM. H. and L. Chrétien, and is discussed by the former in No. 13 of the *Comptes rendus* (p. 549, September 23). A prism of 62° was employed, mounted in front of an objective of 10 cm. aperture and 47 cm. focal length, the spectrum of Capella being photographed on each plate for the purpose of comparison.

The following sets of bands were found, quite sharp and easily measurable, on plates secured on August 16 and 18:—387·0, 388·2; 398·9; 401·2, 402·0; 411·1, 413·8, 419·0; 420·0, 421·3; 425·8, 427·5; 430·1, 431·6, 433·5; and 450·3, 454·2; those at 401, 426, and 450 are very similar in character. The spectrum of the tail comprises three groups of radiations, the mean wave-lengths of which are 401·6, 426·7, and 452·2 respectively. An examination of the plates shows that each of these is composed of two condensations, the separation of each couple being 1·9, 1·7, and 3·9 $\mu\mu$ respectively.

Mr. Gillman, of Aguilas (Spain), has forwarded to us another chart depicting the results of his eye-observations made on September 4, 5, and 11. On the last-named date he was able to trace the tail of the comet to a distance of about 17½° from the head in a direction a little north of west.

THE SPECTROSCOPIC BINARY α DRACONIS.—Since July, 1906, α Draconis has been under observation at the Dominion Observatory, Ottawa, for radial-velocity determinations, and in No. 4, vol. i. (p. 237, July-August), of the Journal of the R.A.S. (Canada), Mr. Harper discusses the observations, with those of other observers, and derives a set of elements for the orbit of this binary. The observed velocities range from −54 km. to +56 km., and Mr. Harper's elements are as follows:—period = 51·38 days, velocity of the system = −16·7 km., eccentricity = 0·42, longitude of periastron (α), from descending node = 198°, T = 1906 July 11d. 0h., and semi-major axis = 30,057,900 km.

ENGINEERING AT THE FINSBURY TECHNICAL COLLEGE.

THE completion of a new wing of the City and Guilds Technical College at Finsbury was the occasion, on Wednesday, October 2, of a large gathering of distinguished members of the city companies to witness the opening ceremony. Mr. Baker, chairman of the Colleges Extension Committee, in inviting the Lord Mayor to declare the new wing open, gave an interesting account of the history of the City and Guilds of London Institute, which, founded in 1878 and incorporated by Royal Charter in 1900, has raised and expended nearly three-quarters of a million pounds for the promotion of technical education.

The growth of the Finsbury Technical College has for some years necessitated the work being carried on in three unconnected buildings, and in order to bring all departments under one roof, with greatly improved facilities for their work, the institute set aside 10,000*l.* from its reserve fund, and the Corporation and Guilds of London contributed an equal amount, while a generous friend of the college contributed 10,000*l.* for equipment. With this sum the committee was able to carry out a long cherished scheme of centralisation and extension, and it was particularly fortunate in having Sir William White as one of its number to advise on all matters relating to the engineering equipment. Mr. Baker also referred to the long and distinguished connection of Prof. Silvanus Thompson and Prof. Meldola with the college, and in conclusion expressed the pleasure of the company at the presence of the Lord Mayor and Sheriffs to open the new wing.

The Lord Mayor, who was received with great enthusiasm, then declared the building open, and delivered an address to the students on the development of character.

Mr. Yarrow, in proposing a vote of thanks, briefly referred to the advantages which the two-year course at Finsbury offered to students, especially those who had served an apprenticeship in an engineering works, and said that in his opinion the Finsbury Technical College fills a special need, which is not supplied by other existing institutions, excellent though many of these are.

Sir John Wolfe-Barry, chairman of the executive committee, seconded the vote of thanks, and after acknowledgment by Sir William Treloar the company proceeded to view the building. On arriving at the engineering laboratory, the Lord Mayor pressed a button, setting the machinery in motion, and afterwards made a tour of inspection with the company, which included Sir Edward Clarke, Sir William White, Sir John Watney (secretary of the institute), Sir A. B. W. Kennedy (president of the Institute of Civil Engineers), Sir Philip Magnus, M.P., Mr. A. C. Morton, M.P., Prof. Unwin, Prof. Dalby, Mr. T. H. Blakesley, Mr. Ralph Palmer, Mr. S. S. Gladstone, and Mr. Soper (assistant secretary of the institute).

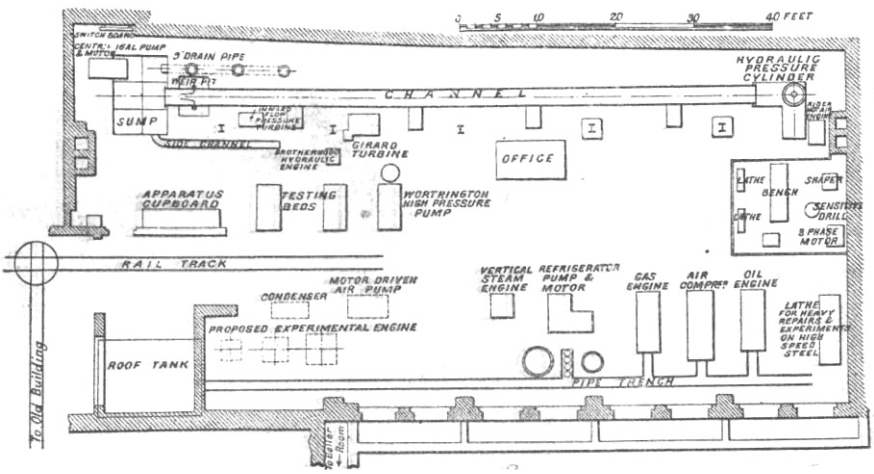

FIG. 1.—Plan of the Engineering Laboratory of the City and Guilds Technical College, Finsbury.

The engineering laboratory, shown on the accompanying plan, is about 100 feet long and 45 feet wide, and is a well-lighted room having walls faced with white tiles from the window levels, those below being brown glazed. Along one side a cast-iron channel of square section, 2 feet wide and 80 feet long, is sunk into the floor. This channel is free from end to end, so that, when occasion requires, the whole length can be utilised for experiments on towing, wave motion, and the like. There are also two smaller channels, parallel to the main one, for draining water into the measuring tanks without disturbing the main channel.

The measuring tanks are six in number, having a combined capacity of about 4000 gallons, and all the water collecting therein can be raised to a tank on the roof by a centrifugal pump delivering 200 gallons a minute against a head of 90 feet; the water is distributed anew by a 5-inch falling main and branches. The usual arrangements of weirs, float gauges, and the like are provided for measuring the water in the channel, and a Venturi meter can also be inserted in the pipe line.

At the other end of the channel is a hydraulic cylinder of special design, capable of giving horizontal and vertical jets up to 2 inches in diameter under any head not exceeding 300 feet. This cylinder is suspended by cross girders

over a pit for receiving the vertical jet, and the horizontal jet is directed along the main channel.

The equipment of hydraulic machinery also includes turbines of the Girard and Francis types, and a high-pressure pump for operating an experimental engine of the Brotherhood type.

The heat-engine equipment consists of a representative set of machines arranged along one side of the laboratory, and spanned by an overhead crane capable of delivering a load of 30 cwt. to a lathe at one end. The engines already installed comprise a 12 horse-power "National" gas engine, with special thermometer pockets in the cylinder walls, and arrangements for releasing and shutting down the valves at any moment. This engine can be run on town gas or on suction gas from a producer. A 6 horse-power oil engine has similar thermometer pockets and valve-releasing gear.

ton "Buckton" testing machine, a combined bending and twisting machine, and a number of other machines for small-scale experiments. A specially designed machine for compression up to fifty tons will also be installed.

The drawing office, over the engineering laboratory, is a well-lighted room 80 feet long and 34 feet wide, with accommodation for one hundred students.

The college workshops have been recently equipped with the most modern tools, and in addition a special shop for the construction and repair of apparatus is provided in the engineering laboratory. The new wing also contains a lecture theatre and rooms for the staff.

As will be apparent from this brief description, the equipment has been designed with the purpose of giving students a practical acquaintance with as wide a field of engineering as possible. All the machinery and apparatus are of moderate dimensions, easily handled by students

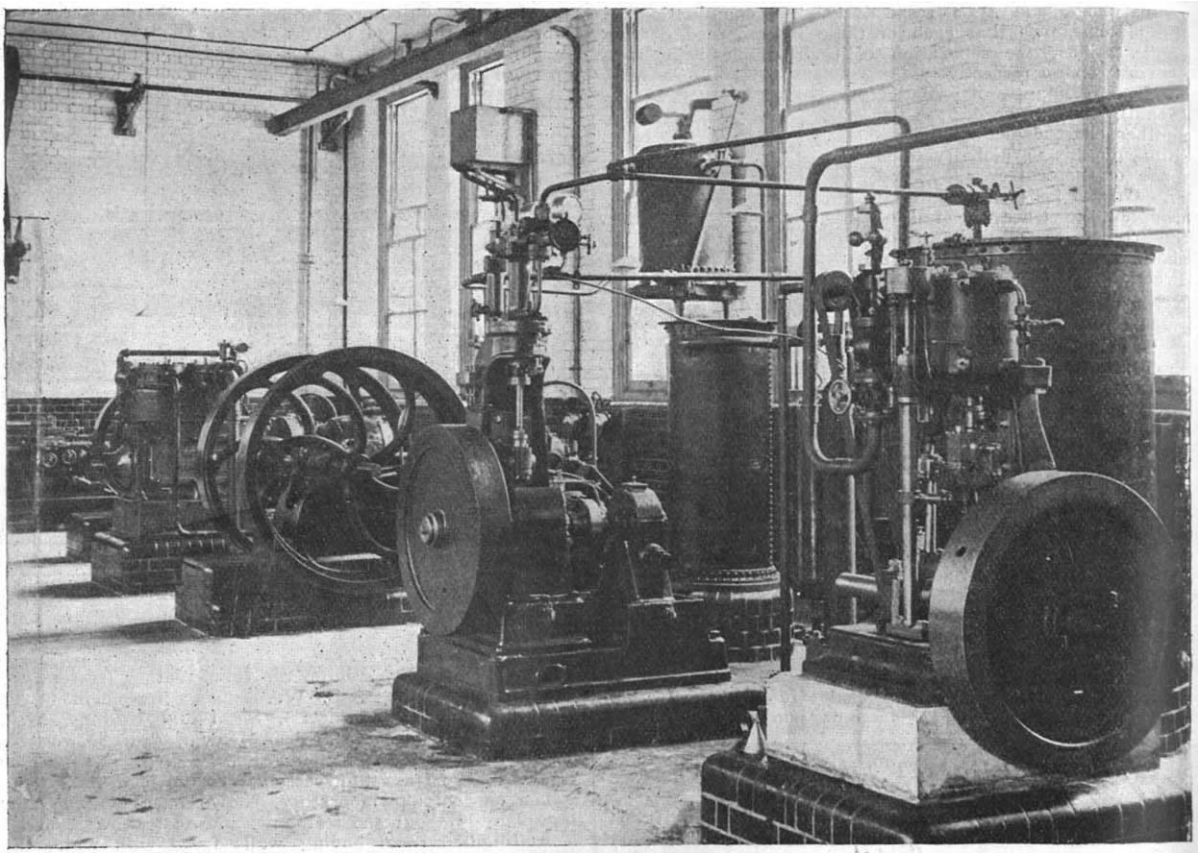

FIG. 2.—View of the Engineering Laboratory showing part of the Heat Engine Equipment.

An experimental "Linde" refrigerating plant is arranged to work with carbonic acid or ammonia by using interchangeable cylinders. The compressing pump is driven by a motor operating through a worm-wheel gear, so arranged that by disconnecting the pump coupling experiments can be made on the efficiency of worm gearing.

A small vertical steam engine, a petrol motor, a "Rider" hot-air engine, and a pulsometer pump are also included, while spaces are reserved for an experimental reciprocating steam engine of compound or triple expansion type, and an independent condensing plant to be installed at an early date. The steam-raising plant will consist of a Yarrow water-tube boiler, and a separately fired superheater.

An experimental compound air compressor, coupled directly to a motor, has been installed, and is fitted with special arrangements for experimental work. The equipment for testing the strength of materials includes a ten-

without excessive supervision, and at a small cost for running expenses.

While instruction, not research, has been the primary object, there is little doubt that in the future original work can be accomplished which will be of interest and value to the engineering profession. E. G. COKER.

FORTHCOMING BOOKS OF SCIENCE.

MR. SIDNEY APPLETON promises:—"A Book of Birds," by W. P. Pycraft, illustrated; "Minerals," by L. J. Spencer, illustrated; "Earthquakes," by Prof W. H. Hobbs, illustrated; "The Moon," by G. P. Serviss, illustrated; "The Warblers of North America," by F. M. Chapman and others, illustrated; "The Life and Habits of the Ants," by Dr. L. I. Dublin, illustrated; "Iron and Steel," by Dr. J. R. Smith, illustrated; "Gold," by Dr. J. R. Smith, illustrated; "The Horse: Ailments and